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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2787A
Plant ID No.:	003-00133
Applicant:	U.S. Department of the Treasury, Internal Revenue Service
Facility Name:	Enterprise Computing Center
Location:	Kearneysville
NAISC Code:	921130
Application Type:	Modification
Received Date:	October 14, 2011
Engineer Assigned:	Edward Andrews
Fee Amount:	\$1000.00
Date Received:	October 14, 2011
Completeness Date:	November 15, 2011
Due Date:	February 13, 2012
Newspaper:	<i>The Journal</i>
Applicant Ad Date:	October 20, 2011
UTMs:	Easting: 248.9 km Northing: 4,365.1 km Zone: 18
Description:	This modification is for the installation of four new boilers in the New MEP Building at the complex.

DESCRIPTION OF MODIFICATION

The U.S. Department of the Treasury, Internal Revenue Service (IRS) operates the Enterprise Computing Center located in Kearneysville, West Virginia. The existing facility consists of two buildings; the Main Building and the Annex and Annex Office Expansion. The Main Building is owned by the General Services Administration (GSA) with delegated operations by the IRS.

The IRS submitted this application to modify Permit R13-2787 for the new MEP Building Addition currently under construction.

Construction of the project began on May 4, 2010 and is projected to be completed on November 1, 2012. The New MEP Building Addition Project is a 4,606 square meter addition consisting of two levels that replaces the mechanical and electrical systems for the existing

Promoting a healthy environment.

facility. Included in the project are four new boilers, which will replace the three existing 5.25 MMBtu/hr boilers, covered by permit R13-2787. The new boilers are Bryan RV series oil fired boilers. These particular boilers will each have a nominal heat rating of 5 MMBtu/hr and will generate hot water to be used for the heating, ventilation and air conditioning system of the Main Building.

SITE INSPECTION

On March 9, 2011, Mr. Joseph Kreger, an Inspector for the Compliance and Enforcement Section, conducted a full-on-site inspection of the facility. Mr. Kreger found the facility to be operating within compliance.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

The applicant used pollutant specific emissions factors from Chapter 1.4 of AP-42 and the manufacturer (carbon monoxide) to estimate emissions from these new boilers. These Bryan forced draft boilers are designed to consume up to 35.71 gallons of No. 2 fuel oil per hour. In addition, the IRS has not elected to limit the operation of these units in any fashion. Thus, annual emissions will be based on an operating schedule that has all four units operating 8,760 hours per year concurrently.

Table # 1 – Emissions from one 5 MMBtu/hr boiler			
Pollutant	#2 Fuel Oil Fired		
	Emission Factor	Hourly Rate lb/hr	Annual Rate (TPY)
Particulate Matter (PM)/PM ₁₀ /PM _{2.5} Filterable	2 lb/M gal	0.07	0.31
PM Condensable Fraction	1.5 lb/M gal	0.05	0.22
Sulfur Dioxide (SO ₂)	0.2 % of Sulfur by wt.	1.01	4.42
Oxides of Nitrogen (NO _x)	20 lb/M gal	0.71	3.11
Carbon Monoxide (CO)	200 ppmvd*	0.95	4.16
Volatile Organic Compounds (VOCs)	0.2 lb/M gal	0.01	0.04
Total HAPs		0.01	0.04

* Manufacturer observed concentration that has been corrected to 3% oxygen.

Carbon monoxide emissions were based on an observed concentration reading that had been corrected to 3% oxygen. The provided flow rate was standardized to 60⁰F. The writer corrected the flow rate to 68⁰F which yields a standardized flow rate of 55,890 standard cubic feet per hour (scfh). In addition, a factor was developed to correct the oxygen content to zero, which yielded a correction factor of 1.168. Typically, the DAQ does not have any rules or

policies requiring the emissions data to be corrected to specific standardized oxygen content. The applicant's estimated CO rate in the application used the actual flow rate at 400⁰F and used the CO concentration as provided.

Table #2 – Total Emissions from all four new boilers		
Pollutant	Four 5MMBtu/hr Units firing with #2 Fuel Oil	
	Hourly Rate (lb/hr)	Annual Rate (TPY)
Total PM/PM ₁₀ /PM _{2.5} (Filterable + Condensable)	0.48	2.10
SO ₂	4.04	17.70
NO _x	2.84	12.44
CO	3.8	16.64
VOCs	0.04	0.18

Table # 3 – Changes in Permitted Limits Or PTE			
Pollutant	Current Limits (TPY)	Proposed (TPY)	Net Increase (TPY)
PM/PM ₁₀ /PM _{2.5} Filterable	0.99	1.24	0.25
Condensable PM	-	0.88	0.88
SO ₂	13.99	17.7	3.71
NO _x	11.82	12.44	0.62
CO	2.46	16.64	14.18
VOCs	0.18	0.18	0

The net change in emissions for this proposed project is less than one new boiler except for carbon monoxide emissions. This increase is clearly attributed to the use of the manufacturer's observed CO concentration.

REGULATORY APPLICABILITY

WV STATE RULES

45CSR2 To Prevent and Control Particulate Air Pollution From Combustion of Fuel In Indirect Heat Exchangers

This rule establishes emission limitations for smoke and particulate matter, which are discharged from combustion of fuel in indirect heat exchangers (boilers and process heaters).

Based on the maximum design heat input rate of these new boilers being rated at

5 MMBtu/hour (less than 10 MMBtu/hr), these boilers are exempted from Sections 4, 5, 6, 8, and 9 of this rule, according to 45CSR§2-11.1. Therefore, the only applicable requirement from this rule is the visual emission standard of 45CSR§2-3.1, which is a 10% opacity limit. Condition 4.2.2. of Permit R13-2787A (facility's existing permit) required the permittee to conduct annual visible emission checks to verify compliance with this standard. This condition will remain unchanged in the draft permit. In addition, the manufacturer expects zero visible emissions to be generated by these new boilers.

45CSR10 To Prevent and Control Air Pollution From Emissions of Sulfur Oxides

The purpose of this rule is to prevent and control air pollution from the emission of sulfur oxides. These units have a maximum design heat input of less than 10 MMBtu/hr and are not subject to Sections 3, 6, 7, and 8 of this rule per 45CSR§10-11.1.

However, 45CSR§10-10.2 establishes recommended specific fuel quality objectives to be met to avoid mandatory controls or sulfur dioxide emission limitations for all fuel burning units, which includes residential units. This rule established Table 45-10B that sets sulfur content limits for oil and coal to be burned in residential units or units not restricted by an applicable requirement of Rule 10. Thus, this table set a maximum sulfur content for new oil (includes distillate oil) fired units at 0.5 % sulfur by weight. Condition 4.1.4. of Permit R13-2787 restricts the sulfur content of the fuel to be consumed at the facility to 0.2%. This condition will be retained in the proposed draft and be applied to the proposed new as well. The new boilers are not subject to any other applicable requirement from this rule.

45CSR13 - Permits for Construction, Modification, Relocation and Operation of Stationary sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The facility has met the applicable requirements of this rule by publishing a Class I Legal Advertisement in *The Journal* on October 20, 2011, paid the \$1000.00 application filing fee, and submitted a complete permit application.

45CSR14 Permit for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration

The activities at the Enterprise Computing Center do not constitute or does not meet the criteria of any of the stationary sources listed in 45CSR§14-2.43.a. Therefore by rule (45CSR§14-2.43.b), the Enterprise Computing Center would have to have the potential to emit more than 250 tons per year of any regulated New Source Review pollutant. This facility without the proposed modification has a potential to emit of 188 tons of oxides of nitrogen per year, which is less than the major source trigger threshold of 250 tons per year. In addition, this proposed modification has an emission potential of less than 250 tons of any regulated New Source Review pollutant, which means this modification is not classified as a major source either. With the proposed modification included, the Enterprise Computing Center would have a potential to emit 189 tons of oxides of nitrogen per year. Thus, the center will be still classified as a minor source with respect to this rule.

45CSR19 Permit for Construction and Major Modification of Major Stationary Sources of Air Pollution Which Cause or Contribute to Nonattainment

The Enterprise Computing Center is located in Berkeley County. Berkeley County is currently attaining the National Ambient Air Quality Standards for all criteria pollutants. Therefore, this rule is not applicable to this modification at this time.

FEDERAL REGULATIONS

45CSR30 Requirements for Operating Permits

Due to the PTE of the existing generator sets at the facility, the Enterprise Computing Center is classified as a major source under Title V of the Clean Air Act Amendments of 1990. As a result, the IRS obtained a Title V Operating Permit in 2010. The proposed changes need to be reflected in the facility operating permit. Thus, the IRS filed a significant modification request to their operating permit in conjunction with this modification application.

40 CFR 63 National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers

This regulation establishes emission limitations for area sources (minor sources of HAPs) that operate at least one boiler. The Enterprise Computing Center is a minor source of HAPs and currently operates boilers burning liquid fuel (distillate oil). Thus, the facility is subject to this regulation.

All of the boilers at the Enterprise Computing Center have a maximum heat input of less than 10 MMBtu/hr and therefore is only subject to the work practices of §63.11223, which requires biennial boiler tune-ups for each unit. Because the heat input of these units are less than 10 MMBtu/hr, the facility is not subject to the energy assessment requirements of §63.11214(c). The draft permit will include the boiler tune-up and notification requirements of this regulation.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Various non-criteria regulated air pollutants are emitted from the incomplete combustion of distillate oil in the boilers. Since only trace amounts of hazardous air pollutants are present after the combustion of the fuel, it is the writer's opinion that any emissions of non-criteria regulated air pollutants will not adversely impact the quality of the surrounding ambient air at the concentrations, discharge rates, and point of introduction into the atmosphere as described in the permit application.

AIR QUALITY IMPACTS ANALYSIS

The writer deemed that an air dispersion modeling study or analysis was not necessary, because the proposed modification does not meet the definition of a major source as defined in 45CSR14.

MONITORING OF OPERATIONS

State Rules 2 and 10 specifically exempt units with a heat input less than 10 MMBtu/hr from the Testing, Monitoring, Recordkeeping and Reporting Sections of these rules. However, area source provisions of the Boiler MACT require recordkeeping of the biennial tune-ups, which will be incorporated into the draft permit.

Permit R13-2787 required visual emission checks once per year for the purpose of verifying compliance with the visual emission standard of Rule 2. The manufacturer noted in its data sheets that the opacity from these units should be zero visible emissions. Thus, a once a year Method 22 observation to verify compliance should be a reasonable measure.

CHANGES TO PERMIT R13-2787

Even though the boilers are not restricted, the generator set are restricted to 500 hours per year to ensure the facility maintains its status as a minor source for Rule 14. Thus, the fuel limit in 4.1.3. will be increased by 265,778 gallons per year to account for the difference between the four new boilers which are replacing the three existing ones.

Carbon Monoxide limits will be added to Table 4.1.1.a. of Condition 4.1.1.

The replacement of the existing boilers is a small part of the overall project of the New MEP Building Addition. This application projects these new boilers to be commissioned by the end of May of 2012 and the total project being completed in November of 2012. Once the MEP Building Addition is complete, the existing boilers will be demolished and removed from the facility. Therefore, Condition 4.1.1.d. will be created to allow the permitte to have all of the boilers operational and be operated as needed until the new addition has be commissioned.

Overall the changes to Permit R13-2787 include the standard changes to Table 1.0 , Conditions 2.4.1., 2.5.1., and as noted in the above evaluation.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable regulations will be achieved. Therefore, I recommend that the Director grant a modification permit to U.S. Department of the Treasury, Internal Revenue Service for the new boilers at the Enterprise Computing Center.

Edward S. Andrews, P.E.
Engineer

Date: December 13, 2011